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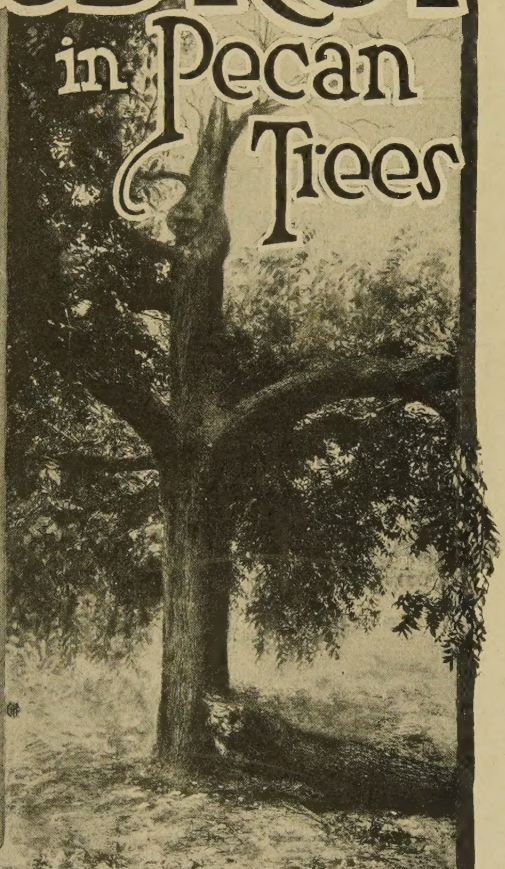
Preventing Wood Rot in Pecan Trees



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WOOD-ROTTING FUNGI are weakening trees in many pecan orchards. These organisms quickly gain entrance to unprotected wounds on the trees and are ultimately the cause of serious losses. While trees affected in this way will frequently stand for many years, inevitably their crop-producing power and life are reduced. The long growing seasons and the hot, humid climatic conditions which obtain in the Southeastern States are particularly favorable to the development of the fungi. The newness of the pecan industry accounts for the fact that losses of this nature have not already become common knowledge.

PREVENTING WOOD ROT IN PECAN TREES.

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THE NEED OF PRUNING.

WOUNDS MADE IN PRUNING pecan trees and those arising from other mechanical injuries, such as careless cultivation, hail, and windstorms, are all possible points of entrance for wood-rotting fungi. The hot, humid climate of the Southeastern States favors the rapid development of the fungi, and unless wounds are given protection from infection and so handled as to facilitate healing, it is almost inevitable that fungi will gain entrance and endanger the entire tree.

While pruning in some pecan orchards has been properly done, this is not universally the case. The orchards which have been mishandled in this respect are probably in the minority, but it is a fact that wood-rotting fungi, entering through wounds, are causing a weakening of trees in many orchards. Trees affected in this way will frequently stand for many years, but it is inevitable that their crop-producing power and life will be reduced. That losses of this nature have not already been felt is explainable by the newness of the industry.

HOW NOT TO REMOVE LIMBS.

Figure 1 shows a practice all too common in the removal of limbs. Stubs varying in length from a few inches to a foot or more are left on the tree. These quickly rot, and when once the fungus enters the body of the tree the work of removing the diseased wood becomes very difficult. Figure 2 shows such a stub removed. The stained area shows clearly the progress of the fungus through the stub and into the tree.

Figure 3 shows a top-worked tree that was neglected for three years. This tree was a total loss, since not enough sound wood remained to support the top after cleaning out the rotted parts.

HOW TO REMOVE LIMBS.

In no case should stubs be left on the tree. To remove a limb, a sharp saw should be used and the cut made practically flush with the body of the tree, as shown in figure 4. This permits the wound to heal in the shortest length of time and leaves no surface or pocket

for the collection of water. Figure 5 shows a wound properly made and the callus rapidly covering it. In a vigorously growing tree a wound like this will be completely covered in two to four years, and then all danger is past.

In removing a large limb it is necessary first to cut it off several feet from the tree and then to remove the stub properly. If the cut is made flush with the body of the tree in the first instance, it is usually impossible to prevent the weight of the limb from tearing the bark below it. By sawing it twice, as here directed, this danger is obviated.

FIG. 1.—An example of a badly pruned pecan tree. Stubs should not be left on the tree.

FIG. 2.—A stub removed from a wound improperly made. The stained area shows how the fungus has been working into the trunk through the stub.

WOUNDS MADE IN TOP-WORKING.

Whatever method of top-working is followed, the wounds should be so made and handled as to facilitate healing and prevent exposure to the elements and the attendant dangers of fungous infection. These results can best be obtained by sloping the cuts sufficiently to allow drainage and by keeping the stubs of the old limbs completely covered with some waterproof material until the healing process is complete. Figure 6 shows the ends of two limbs which had been neglected in this respect for two seasons and figure 7 shows these same limbs after the excess growth had been removed and the ends of the old limbs sloped to allow drainage. These ends, which were cut off, had begun to decay, and inevitably would have weakened the limbs had they been left without attention.

The stubs remaining at the junction of the new growth with the old, as shown in figure 8, should be removed, as shown in figure 9.

These stubs are quickly attacked by wood-rotting fungi, which may extend into the limbs.

FIG. 3.—A badly pruned and neglected top-worked pecan tree. This tree is a total loss.

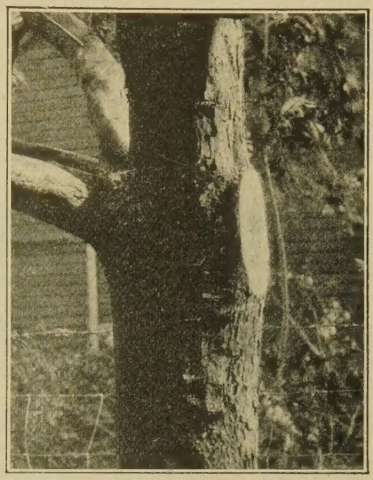

FIG. 4.—A wound on a pecan tree, illustrating the proper way to remove a limb to facilitate healing.

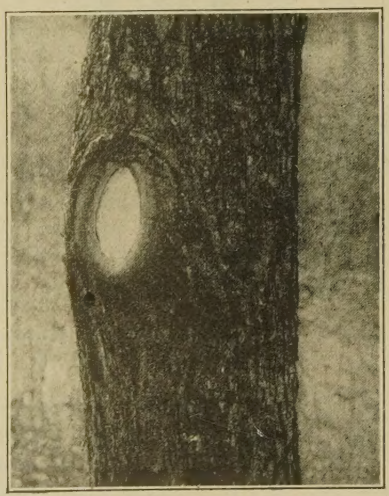

FIG. 5.—The callus in process of covering a properly made wound in a vigorously growing pecan tree.

CLEANING OUT HEART-ROT.

In extreme cases when rot has gained entrance to the heart of the tree, the rotted wood must be cleaned out if serious weakening is to

be prevented. To neglect this may eventually so weaken the tree that a strong wind will blow it over. Figure 10 shows such a tree with the center in an advanced stage of decay. The work of the fungus was in this case furthered by wood-boring beetles, which have peppered the discolored area with holes. It is necessary to clean out completely such discolored wood if the ravages of fungi and beetles are to be stopped. The diseased portion should be removed back to sound wood. The bottom of such a wound should be sloped down-

FIG. 6.—A top-worked pecan tree with projecting stubs, cut horizontally.

FIG. 7.—The same tree shown in figure 6, with the stubs cut to allow drainage.

ward to prevent the collection of water, and the edges should be smoothed off with a sharp knife.

THE PROTECTION OF WOUNDS.

It is necessary that most wounds be protected from moisture and fungous infection throughout the course of healing. It is obvious that in orchard or nursery practice it is hardly worth while to disinfect and paint the areas left by the proper removal of very small limbs and twigs from rapidly growing young trees. Such wounds heal so quickly that they virtually take care of themselves. How-

ever, it is the part of good practice in the South to give adequate protection from moisture and fungous invasion to wounds which will be more than one season in healing. The long growing seasons and hot, humid climatic conditions which obtain in the Southern States are particularly favorable for the development of wood-rotting fungi. That these fungi quickly gain entrance to exposed or improperly made wounds in pecans has been noted by growers as well as by the writer, and until experimental work has demonstrated that the contrary practice is desirable, sound judgment dictates the protection of such wounds.

Various substances may be used for this purpose. Pure white lead and linseed oil, grafting wax, coal tar, a mixture composed of one-third creosote and two-thirds coal tar, and various proprietary preparations have all been used with more or less success in protecting wounds on trees. The most desirable compound is one which

FIG. 8.—Top of pecan tree, showing spurs left at the junction of old and new growth (indicated by × marks).

FIG. 9.—The same top shown in figure 8, with the spurs removed, thus eliminating points of entrance for fungi.

disinfects the wound, furnishes complete protection for the longest period, and causes the least injury to the tissues. From these standpoints the coal-tar-creosote preparation is probably the best. After a wound is made it should be left until dry and then given a thorough coat of some protective substance, which should be renewed as often as is necessary for complete protection until the exposed area is healed. The same principles apply to the protection of cavities from further decay. After the diseased area is entirely removed, the exposed wood should be treated with creosote and then with the protective material.

During recent years the art of tree surgery has received increasing attention from the owners of shade and orchard trees, and methods have been evolved by tree surgeons for filling cavities with cement.

This practice has proved efficient in strengthening trees weakened by decay and in preventing further damage from fungi. This recently developed art has been adequately and fully described by Collins.[1]

FIG. 10.—Heart-rot in a mature pecan tree.

TIME FOR PRUNING.

For the production of thrifty disease-free trees all pecan pruning should generally be done in the dormant season. Removing limbs during the summer interferes with the growth processes of the tree by reducing the leaf area, a practice that should be avoided.

TOOLS FOR PRUNING.

The tools used in pruning should be of good quality and sharp. With dull tools it is impossible to do satisfactory work. A pair each of short-handled and long-handled shears, saws of several different sizes, and one or more pruning hooks will answer for most of the work in an orchard. For cleaning out heart-rot an outside-ground gouge with a cutting edge of about three-fourths of an inch, a chisel, a mallet, and a strong knife will usually suffice.

The prompt care of wounds and lesions on pecans will amply repay the grower by insuring for him sound, disease-free trees. Trees are frequently injured at the base by cultivating tools. It is the part of good practice to cut away smoothly the bark torn in this manner and paint the wounds to prevent any possibility of the entrance of rot-producing fungi.

[1] Collins, J. F. Practical tree surgery. *In* U. S. Dept. Agr. Yearbook, 1913, p. 163–190, pl. 16–22. 1914.

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